

APPENDIX C

(CLEAN VERSION OF ALL PENDING CLAIMS)

(Serial No. 10/229,868)

CLAIMS

What is claimed is:

1. A method for planarizing a nonplanar film surface of a wafer comprising:
securing an interface material relative to the wafer;
contacting the nonplanar film surface of the wafer with the interface material; and
forming a substantially flat planar surface on the nonplanar film surface of the wafer.
2. The method of claim 1, further comprising:
planarizing the wafer using a planarization process.
3. The method of claim 1, further comprising:
applying a fluid under pressure to one side of the interface material.
4. (Amended) The method of claim 1, wherein forming the substantially flat planar surface includes:
coating the nonplanar film surface of the wafer with a deformable material.
5. The method of claim 4, further comprising:
contacting the deformable material with the interface material.
6. The method of claim 5, further comprising:
contacting the interface material with an object.
7. The method of claim 6, further comprising:
applying a fluid under pressure between the interface material and the object.

8. The method of claim 5, further comprising:
curing the deformable material while the interface material is contacting the deformable material.

9. The method of claim 5, further comprising:
hardening the deformable material while the interface material is contacting the deformable material.

10. The method of claim 5, further comprising:
solidifying the deformable material while the interface material is contacting the deformable material.

11. (Amended) The method of claim 5, further comprising:
applying pressure to the interface material while the interface material contacts the deformable material.

12. The method of claim 5, further comprising:
applying pressure to the coating of the deformable material on the nonplanar film surface of the wafer while the interface material contacts the deformable material.

13. The method of claim 5, wherein the interface material includes a substantially flat planar surface thereon contacting the deformable material.

14. (Amended) The method of claim 6, wherein the object includes a shaped surface thereon contacting the interface material.

15. The method of claim 14, wherein the shaped surface includes a convex surface portion.

16. The method of claim 14, wherein the shaped surface includes a concave surface portion.

17. The method of claim 14, wherein the shaped surface includes a convex surface portion and a concave surface portion.

18. The method of claim 6, wherein the object includes a flat optical glass object.

19. (Amended) The method of claim 5, further including:
coating the interface material with a release agent prior to contacting the deformable material.

20. (Amended) The method of claim 6, further including:
coating the object with a release agent prior to contacting the interface material.

21. The method of claim 6, wherein the object includes a substantially inflexible object having a flat surface thereon.

22. The method of claim 4, further comprising:
contacting the interface material with a member.

23. The method of claim 22, further comprising:
applying a fluid under pressure to the interface material and to the member.

24. The method of claim 21, wherein a back of the wafer is contacted with a flexible resilient member.

25. The method of claim 24, further comprising:
applying pressure to the flexible resilient member to form a substantially flat planar surface on the deformable material.

26. The method of claim 24, further comprising:
contacting the flexible resilient member with a substrate; and
applying pressure to the substrate thereby applying pressure to the flexible resilient member.

27. (Amended) The method of claim 24, further comprising:
applying pressure to the wafer through the flexible resilient member, thereby applying pressure to
the object and thereby deforming the coating of the deformable material on the wafer.

28. The method of claim 1, wherein the wafer includes a wafer having a plurality of
electrical circuit components on a surface thereof.

29. The method of claim 1, wherein the wafer includes a wafer having a plurality of
electrical circuit components on a surface thereof and a coating substantially covering the
plurality of electrical circuit components.

30. The method of claim 1, wherein the wafer includes a wafer having a plurality of
electrical circuit components on a surface thereof and a coating substantially covering the
plurality of electrical circuit components and the wafer.

31. The method of claim 5, further comprising:
applying pressure to the interface material while the interface material contacts the deformable
material.

32. The method of claim 6, further comprising:
applying a substantially uniform pressure to the object while the object is in contact with the
interface material.

33. The method of claim 5, further comprising:
applying a substantially uniform pressure to the deformable material on the nonplanar film surface of the wafer to form a substantially flat planar surface on the deformable material.

34. The method of claim 2, wherein the planarization process includes a chemical mechanical planarization process.

35. The method of claim 2, wherein the planarization process includes a chemical etching process.

36. The method of claim 3, further comprising:
applying a vacuum to the interface material.

37. A method for planarizing a nonplanar film surface of a wafer having at least one electrical circuit formed thereon comprising:
securing an interface material in a position relative to the nonplanar film surface of the wafer;
forming a substantially flat planar surface on the nonplanar film surface of the wafer; and
planarizing the substantially flat planar surface on the wafer using a planarization process.

38. The method of claim 37, further comprising:
applying a fluid under pressure to the interface material.

39. The method of claim 37, further comprising:
applying a vacuum to the interface material.

40. The method of claim 37, wherein the planarization process includes a chemical mechanical planarization process.

41. The method of claim 37, wherein the planarization process includes an etching process.

42. (Amended) The method of claim 37, wherein forming the substantially flat planar surface includes:
coating the nonplanar film surface of the wafer with a deformable material.

43. The method of claim 42, further comprising:
contacting the interface material with an object.

44. The method of claim 43, further comprising:
curing the deformable material while the object contacts the interface material.

45. The method of claim 43, further comprising:
hardening the deformable material while the object contacts the interface material.

46. The method of claim 43, further comprising:
solidifying the deformable material while the object contacts the interface material.

47. The method of claim 43, further comprising:
applying pressure to the object contacting the interface material while the interface material contacts the deformable material.

48. The method of claim 42, further comprising:
applying pressure to the coating of the deformable material on the nonplanar film surface of the wafer while the interface material contacts the deformable material.

49. The method of claim 43, wherein the object includes a substantially flat planar surface thereon contacting the interface material.

50. The method of claim 43, wherein the object includes a shaped surface thereon contacting the interface material.

51. The method of claim 50, wherein the shaped surface includes a convex surface portion.

52. The method of claim 50, wherein the shaped surface includes a concave surface portion.

53. The method of claim 50, wherein the shaped surface includes a convex surface portion and a concave surface portion.

54. The method of claim 50, wherein the shaped surface includes a desired shaped surface.

55. The method of claim 43, wherein the object includes a flat optical glass object.

56. (Amended) The method of claim 43, further including:
coating the object with a release agent prior to contacting the interface material.

57. The method of claim 43, wherein the object includes a substantially inflexible object.

58. The method of claim 37, further comprising:
contacting the wafer with a flexible resilient member.

59. The method of claim 43, wherein a back of the wafer is contacted with a flexible resilient member.

60. The method of claim 59, further comprising:
applying pressure to the flexible resilient member to form a substantially flat planar surface on the deformable material.

61. The method of claim 59, further comprising:
contacting the flexible resilient member with a substrate; and
applying pressure to the substrate thereby applying pressure to the flexible resilient member.

62. The method of claim 59, further comprising:
applying pressure to the wafer by applying pressure to the flexible resilient member thereby
applying pressure to the object.

63. The method of claim 37, wherein the wafer includes a wafer having a plurality of electrical circuit components on a surface thereof.

64. The method of claim 37, wherein the wafer includes a wafer having a plurality of electrical circuit components on a surface thereof and a coating substantially covering the plurality of electrical circuit components.

65. The method of claim 37, wherein the wafer includes a wafer having a plurality of electrical circuit components on a surface thereof and a coating substantially covering the plurality of electrical circuit components and the wafer.

66. The method of claim 43, further comprising:
applying pressure to the object while the object is in contact with the interface material.

67. The method of claim 43, further comprising:
applying a substantially uniform pressure to the object while the interface material is in contact with the deformable material.

68. The method of claim 43, further comprising:
applying a substantially uniform pressure to the deformable material on the nonplanar film surface of the wafer to form a substantially flat planar surface on the deformable material.

69. A method for planarizing a nonplanar film surface on a wafer comprising:
securing an interface material in a position relative to the nonplanar film surface on the wafer;
applying a deformable material to the nonplanar film surface of the wafer;
contacting the deformable material with the interface material;
forming a substantially flat planar surface on the deformable material applied to the nonplanar film surface of the wafer; and
applying a fluid under pressure to the interface material.

70. The method of claim 69, further comprising:
applying a vacuum to the interface material.

71. The method of claim 69, further comprising:
planarizing the wafer using a planarization process.

72. The method of claim 71, wherein the planarization process includes a chemical mechanical planarization process.

73. The method of claim 71, wherein the planarization process includes an etching process.

74. (Amended) A method for planarizing a nonplanar film surface of a wafer comprising:
providing a wafer having a surface having a nonplanar film thereon;
securing an interface material in a position with respect to the wafer;
applying a deformable material to the nonplanar film surface of the wafer;

contacting the interface material with an object having a substantially planar surface thereon;
contacting the deformable material with the interface material;
forming a substantially flat planar surface on the deformable material on the nonplanar film
surface of the wafer; and
applying a pressurized fluid to the interface material.

75. The method of claim 74, further comprising:
applying a vacuum to the interface material.

76. The method of claim 74, further comprising:
planarizing the wafer using a planarization process.

77. (Amended) A method for planarizing a nonplanar film surface on a wafer
comprising:
providing a wafer having a nonplanar film located on a surface thereof;
securing an interface material in a position with respect to the wafer;
providing a flexible resilient member at another surface of the wafer;
applying a deformable material to the nonplanar film surface of the wafer;
contacting the deformable material with the interface material;
forming a substantially flat planar surface on the deformable material on the nonplanar film
surface of the wafer using an object having a substantially flat planar surface thereon; and
contacting the interface material using pressurized fluid.

78. The method of claim 77, further comprising:
applying a vacuum to the interface material.

79. The method of claim 77, further comprising:
planarizing the wafer using a planarization process.

80. The method of claim 77, wherein the deformable material is contacted by the interface material.

81. (Amended) A method for planarizing a nonplanar film surface of a wafer comprising:
providing a wafer having a nonplanar film located on a surface thereof;
securing an interface material in a position with respect to the wafer;
providing an object having a substantially flat planar surface thereon;
providing a flexible resilient member;
applying a deformable material to the nonplanar film surface of the wafer;
contacting another surface of the wafer with the flexible resilient member;
applying pressure to the deformable material;
forming a substantially flat planar surface on the deformable material on the nonplanar film surface of the wafer;
contacting the interface material using pressurized fluid; and
planarizing the wafer.

82. The method of claim 81, further comprising:
applying a vacuum to the interface material.

83. (Amended) A method for planarizing a nonplanar surface of a wafer, the method comprising:
providing a wafer having a nonplanar surface thereon;
securing an interface material in a position with respect to the wafer;
forming a substantially flat planar surface on the nonplanar surface of the wafer;
contacting the interface material using pressurized fluid; and
planarizing the wafer.

84. The method of claim 83, further comprising:
applying a vacuum to the interface material.

85. A method for planarizing a nonplanar surface of a wafer having at least one electrical circuit formed thereon comprising:
providing a wafer having a nonplanar surface thereon;
securing an interface material with respect to the nonplanar surface of the wafer;
forming a substantially flat planar surface on the nonplanar surface of the wafer;
contacting the interface material using pressurized fluid; and
planarizing the substantially flat planar surface on the wafer.

86. The method of claim 85, further comprising:
applying a vacuum to the interface material.

87. A method for planarizing a nonplanar surface of a wafer comprising:
providing a wafer having a nonplanar surface thereon;
securing interface material with respect to the nonplanar surface of the wafer;
applying a deformable material to the nonplanar surface of the wafer;
forming a substantially flat planar surface on the deformable material;
contacting the interface material using pressurized fluid; and
planarizing the wafer.

88. The method of claim 87, further comprising:
applying a vacuum to the interface material.

89. (Amended) A method for planarizing a nonplanar surface of a wafer comprising:
securing an interface material with respect to the nonplanar surface of the wafer;
providing an object having a flat planar surface thereon;
applying a deformable material to the nonplanar surface of the wafer;

contacting the deformable material using the interface material;
forming a substantially flat planar surface on the deformable material;
contacting the interface material using fluid; and
planarizing the wafer.

90. The method of claim 89, further comprising:
applying a vacuum to the interface material.

91. (Amended) A method for planarizing a nonplanar surface of a wafer comprising:
providing a wafer having a nonplanar surface;
providing a secured interface material;
providing an object having a substantially flat planar surface thereon;
providing a flexible resilient member adjacent another surface of the wafer;
applying a deformable material to the nonplanar surface of the wafer;
contacting the deformable material with the interface material;
forming a substantially flat planar surface on the deformable material on the nonplanar surface of
the wafer;
contacting the interface material by applying a fluid thereto; and
planarizing the wafer.

92. The method of claim 91, further comprising:
applying a vacuum to the interface material.

93. (Amended) The method of claim 91, wherein the interface material is contacted
by the object.

94. (Amended) A method for planarizing a nonplanar surface of a wafer comprising:
securing an interface material with respect to the nonplanar surface of the wafer;
providing an object having a substantially flat planar surface thereon;

providing a flexible resilient member;
applying a deformable material to the nonplanar surface of the wafer;
contacting another surface of the wafer with the flexible resilient member;
applying pressure to the deformable material;
forming a substantially flat planar surface on the deformable material on the nonplanar surface of the wafer;
contacting the interface material using fluid; and
planarizing the wafer.

95. The method of claim 94, further comprising:
applying a vacuum to the interface material.

96. (Amended) A method for planarizing a nonplanar surface of a wafer comprising:
securing an interface material with respect to the nonplanar surface of the wafer;
forming a substantially flat planar surface on the nonplanar surface of the wafer;
removing the interface material from the wafer; and
planarizing the substantially flat planar surface on the nonplanar surface of the wafer.

97. The method of claim 96, further comprising:
applying a vacuum to the interface material.

98. (Amended) A method for planarizing a nonplanar surface of a wafer having at least one electrical circuit formed thereon comprising:
securing an interface material with respect to the wafer;
forming a substantially flat planar surface on the nonplanar surface of the wafer;
separating the interface material from the wafer; and
planarizing the substantially flat planar surface on the nonplanar surface of the wafer.

99. The method of claim 98, further comprising:
applying a vacuum to the interface material.

100. (Amended) A method for planarizing a nonplanar surface of a wafer comprising:
securing an interface material with respect to the wafer;
applying a deformable material to the nonplanar surface of the wafer;
forming a substantially flat planar surface on the deformable material applied to the nonplanar surface of the wafer;
separating the interface material from the wafer; and
planarizing the substantially flat planar surface on the nonplanar surface of the wafer.

101. The method of claim 100, further comprising:
applying a vacuum to the interface material.

102. (Amended) A method for planarizing a nonplanar surface of a wafer comprising:
providing a wafer having a nonplanar surface;
securing an interface material with respect to the wafer;
providing an object having a substantially flat planar surface thereon;
applying a deformable material to the nonplanar surface of the wafer;
contacting the interface material by the object;
contacting the deformable material with the interface material;
forming a substantially flat planar surface on the deformable material on the nonplanar surface of the wafer;
removing the interface material from the wafer; and
planarizing the wafer.

103. The method of claim 102, further comprising:
applying a vacuum to the interface material.

104. (Amended) A method for planarizing a nonplanar surface of a wafer comprising:
securing an interface material substantially retained in a position regarding the wafer;
providing an object having a substantially flat planar surface thereon;
providing a flexible resilient member at another surface of the wafer;
applying a deformable material to the nonplanar surface of the wafer;
contacting the deformable material;
forming a substantially flat planar surface on the deformable material on the nonplanar surface of
the wafer;
removing the interface material from the wafer; and
planarizing the substantially flat planar surface on the deformable material on the nonplanar
surface of the wafer.

105. The method of claim 104, further comprising:
applying a vacuum to the interface material.

106. The method of claim 104, wherein the interface material is contacted by the
object.

107. (Amended) A method for planarizing a nonplanar surface of a wafer comprising:
securing an interface material with respect to the wafer;
providing an object having a substantially flat planar surface thereon;
providing a flexible resilient member;
applying a deformable material to the nonplanar surface of the wafer;
contacting another surface of the wafer using the flexible resilient member;
applying pressure to the deformable material;
forming a substantially flat planar surface on the deformable material on the nonplanar surface of
the wafer;
removing the interface material from the wafer using a fluid; and

planarizing the substantially flat planar surface on the deformable material on the nonplanar surface of the wafer.

108. The method of claim 107, further comprising:
applying a vacuum to the interface material.

109. (Amended) An apparatus for planarization of a surface on a wafer using an object having an upper surface, a lower surface, and an outer diameter comprising:
an interface material located below the lower surface of the object and substantially secured in a position between the lower surface of the object and the surface of the wafer.

110. The apparatus of claim 109, further comprising:
a lid assembly, the lid assembly including the object therein.

111. The apparatus of claim 109, further comprising:
a lid assembly including:
an upper lid;
a middle lid having an upper surface, a lower surface, an inner surface, and an outer surface, the middle lid located between the upper lid and a lower lid; and
the lower lid having a portion thereof located below the lower surface of the object.

112. The apparatus of claim 111, further comprising:
an interface clamp retaining a portion of the interface material between the lower lid and the interface clamp.

113. The apparatus of claim 112, further comprising:
an annular seal sealingly engaging a portion of the object and a portion of the lid assembly.

114. The apparatus of claim 111, wherein the lower lid includes a plurality of apertures therein.

115. The apparatus of claim 111, further comprising:
a chamber located below the lower lid.

116. The apparatus of claim 111, further comprising:
a plurality of fasteners retaining the upper lid to the middle lid.

117. The apparatus of claim 115, further comprising:
a plurality of fasteners retaining the lower lid to the chamber.

118. The apparatus of claim 112, further comprising:
a plurality of fasteners retaining the interface clamp to the middle lid.

119. The apparatus of claim 111, wherein the upper lid comprises a generally cylindrical annular member having an upper surface, an inner diameter surface, a lower surface, an outer diameter surface, and a plurality of apertures extending from the upper surface to the lower surface.

120. The apparatus of claim 111, wherein the lower lid comprises a generally cylindrical annular member having an upper surface, a first vertical inner cylindrical surface, an inner annular surface, a second vertical inner cylindrical surface, a bottom surface, an outer cylindrical surface, and a plurality of apertures for receiving portions of fasteners therein.

121. (Amended) The apparatus of claim 111, wherein the middle lid comprises a generally cylindrical annular member having an upper surface, a frustoconical annular inner surface, an inner cylindrical surface, a first cylindrical annular surface, a first vertical outer diameter surface, a second cylindrical annular surface, a second vertical outer diameter surface, at least one aperture for supplying a gas therethrough, and at least one annular seal for sealingly engaging a portion of the object.

122. The apparatus of claim 111, further comprising:
an interface clamp connected to the middle lid retaining a portion of the interface material between the lower lid and the interface clamp.

124. (Amended) The apparatus of claim 121, further comprising:
an interface clamp connected to the middle lid retaining a portion of the interface material between the lower lid and the interface clamp.

125. The apparatus of claim 124, wherein the inner cylindrical surface of the middle lid includes an annular cylindrical lip having a plurality of radially extending grooves therein.

126. (Amended) The apparatus of claim 111, wherein the middle lid comprises a generally cylindrical annular member having a first upper surface, a vertical cylindrical surface, a second upper surface, a first inner diameter vertical surface, an annular cylindrical surface, a second inner diameter vertical surface, a lower surface, an outer diameter surface, at least one aperture for supplying a gas therethrough, and at least one annular seal for sealing engaging a portion of the object.

127. The apparatus of claim 126, further comprising:
an interface clamp connected to the middle lid retaining a portion of the interface material between the lower lid and the interface clamp.

128. The apparatus of claim 111, further comprising:
a lid clamp located between the upper lid and the middle lid.

129. The apparatus of claim 111, further comprising:
an object clamp located between the upper lid and the middle lid; and
a lid clamp located between the upper lid and the middle lid, the lid clamp further located outside
the object clamp.

130. (Amended) An apparatus for planarization of a surface on a wafer using an object
having an upper surface, lower surface, and outer diameter, comprising:
an upper lid located above the object;
a middle lid;
a secured interface material located below the lower surface of the object; and
a lower lid having a portion thereof located below the lower surface of the object.

131. The apparatus of claim 130, further comprising:
an interface clamp retaining a portion of the interface material between the middle lid and the
interface clamp.

132. The apparatus of claim 130, further comprising:
an annular seal located on the middle lid sealingly engaging a portion of the object.

133. The apparatus of claim 130, wherein the lower lid includes a plurality of apertures
therein.

134. The apparatus of claim 130, wherein the middle lid includes an annular seal
sealingly engaging a portion of the object.

135. The apparatus of claim 130, further comprising:
a chamber located below the lower lid.

136. The apparatus of claim 130, further comprising:
a plurality of fasteners retaining the upper lid to the middle lid.

137. The apparatus of claim 135, further comprising:
a plurality of fasteners retaining the lower lid to the chamber.

138. The apparatus of claim 131, further comprising:
a plurality of fasteners retaining the interface clamp to the middle lid.

139. The apparatus of claim 130, further comprising:
an object clamp located between the upper lid and the middle lid; and
a lid clamp located between the upper lid and the middle lid.

140. The apparatus of claim 130, wherein the upper lid comprises a generally cylindrical annular member having an upper surface, an inner diameter surface, a lower surface, an outer diameter surface, and a plurality of apertures extending from the upper surface to the lower surface.

141. The apparatus of claim 130, wherein the lower lid comprises a generally cylindrical annular member having an upper surface, a first vertical inner cylindrical surface, an inner annular surface, a second vertical inner cylindrical surface, a bottom surface, an outer cylindrical surface, and a plurality of apertures for receiving portions of fasteners therein.

142. The apparatus of claim 130, wherein the middle lid comprises a generally cylindrical annular member having an upper surface, a frustoconical annular inner surface, an inner cylindrical surface, a first cylindrical annular surface, a first vertical outer diameter surface, a second cylindrical annular surface, a second vertical outer diameter surface, at least one aperture for supplying a gas therethrough, and at least one annular seal for sealingly engaging a portion of the object, the middle lid located between the upper lid and the lower lid.

143. The apparatus of claim 142, further comprising:
an interface clamp connected to the middle lid retaining a portion of the interface material between the lower lid and the interface clamp.

145. The apparatus of claim 130, further comprising:
an interface clamp connected to the middle lid retaining a portion of the interface material between the lower lid and the interface clamp.

146. (Amended) The apparatus of claim 142, wherein the inner cylindrical surface of the middle lid further comprises an annular cylindrical lip having a plurality of radially extending grooves therein.

147. The apparatus of claim 130, wherein the middle lid comprises a generally cylindrical annular member having a first upper surface, a vertical cylindrical surface, a second upper surface, a first inner diameter vertical surface, an annular cylindrical surface, a second inner diameter vertical surface, a lower surface, an outer diameter surface, at least one aperture for supplying a gas therethrough, and at least one annular seal for sealingly engaging a portion of the object, the middle lid located between the upper lid and the lower lid.

148. (Amended) An apparatus for planarization of a surface on a wafer using an object having an upper surface, lower surface, and outer diameter, comprising:
a lid assembly comprising:

- an upper lid having a portion located above said object;
- a middle lid;
- a secured interface material located below the lower surface of the object;
- a lower lid located below the middle lid; and

a chamber located below the lid assembly, the chamber including a platform located therein.

149. The apparatus of claim 148, further comprising:
a resilient member located on the platform in the chamber.

150. The apparatus of claim 148, further comprising:
an interface clamp retaining a portion of the interface material between the middle lid and the interface clamp.

151. (Amended) The apparatus of claim 148, further comprising:
an annular seal located on a portion of the middle lid sealingly engaging a portion of the object.

152. The apparatus of claim 148, wherein the lower lid further comprises a plurality of apertures therein.

153. The apparatus of claim 148, further comprising:
a plurality of fasteners retaining the upper lid to the middle lid.

154. The apparatus of claim 148, further comprising:
a plurality of fasteners retaining the lower lid to the chamber.

155. The apparatus of claim 150, further comprising:
a plurality of fasteners retaining the interface clamp to the lower lid.

156. The apparatus of claim 148, wherein the upper lid comprises a generally cylindrical annular member having an upper surface, an inner diameter surface, a lower surface, an outer diameter surface, and a plurality of apertures extending from the upper surface to the lower surface.

157. The apparatus of claim 148, wherein the lower lid comprises a generally cylindrical annular member having an upper surface, a first vertical inner cylindrical surface, an inner annular surface, a second vertical inner cylindrical surface, a bottom surface, an outer cylindrical surface, and a plurality of apertures for receiving portions of fasteners therein.

158. (Amended) The apparatus of claim 148, wherein the middle lid comprises a generally cylindrical annular member having an upper surface, a frustoconical annular inner surface, an inner cylindrical surface, a first cylindrical annular surface, a first vertical outer diameter surface, a second cylindrical annular surface, a second vertical outer diameter surface, at least one aperture for supplying a gas therethrough, and at least one annular seal for sealingly engaging a portion of the object, the middle lid located between the upper lid and the lower lid.

159. The apparatus of claim 158, further comprising:
an interface clamp connected to the middle lid retaining a portion of the interface material
between the lower lid and the interface clamp.

161. (Amended) The apparatus of claim 148, further comprising:
an interface clamp connected to the middle lid retaining a portion of the interface material
between the lower lid and the interface clamp.

162. (Amended) The apparatus of claim 158, wherein the inner cylindrical surface of the middle lid further comprises an annular cylindrical lip having a plurality of radially extending grooves therein.

163. (Amended) The apparatus of claim 148, wherein the middle lid comprises a generally cylindrical annular member having a first upper surface, a vertical cylindrical surface, a second upper surface, a first inner diameter vertical surface, an annular cylindrical surface, a second inner diameter vertical surface, a lower surface, an outer diameter surface, at least one aperture for supplying a gas therethrough, and at least one annular seal for sealingly engaging a portion of the object, the middle lid located between the upper lid and the lower lid.

164. The apparatus of claim 163, further comprising:
an interface clamp connected to the middle lid retaining a portion of the interface material
between the lower lid and the interface clamp.

165. The apparatus of claim 148, further comprising:
an object clamp located between the upper lid and the middle lid.

166. The apparatus of claim 148, further comprising:
a lid clamp located between the upper lid and the middle lid.

167. The apparatus of claim 148, further comprising:
an object clamp located between the upper lid and the middle lid; and
a lid clamp located between the upper lid and the middle lid, the lid clamp further located outside
the object clamp.

168. (Amended) An apparatus for planarization of a surface on a wafer using an object comprising:

- an upper lid including an upper surface, an inner diameter surface, a lower surface, an outer diameter surface, and a plurality of apertures extending from the upper surface to the lower surface;
- a lid clamp including an upper surface, an inner diameter surface, a lower surface, an outer diameter surface, and a plurality of apertures extending from the upper surface to the lower surface, the lid clamp located below the upper lid;
- a middle lid including a generally cylindrical annular member having an upper surface, a frustoconical annular inner surface, an inner cylindrical surface, a first cylindrical annular surface having a plurality of threaded blind apertures therein, a first vertical outer diameter surface, a second cylindrical annular surface, a second vertical outer diameter surface, at least one aperture for supplying a gas therethrough, a plurality of threaded apertures, and at least one annular seal for sealingly engaging a portion of an object, the middle lid located between the upper lid and a lower lid;
- an object clamp including a generally cylindrical annular member having an upper surface, an inner diameter vertical surface, a frustoconical annular surface, a lower surface and an outer diameter surface;
- an annular seal having a portion thereof abutting the object clamp and the middle lid;
- a secured interface material located below a lower surface of the object;
- the lower lid having a portion thereof located below the lower surface of the object, the lower lid including an upper surface having an annular seal groove therein having an annular seal therein sealingly engaging the second cylindrical annular surface of the middle lid, a first vertical inner cylindrical surface, an inner annular surface having a plurality of blind apertures therein, a second vertical inner cylindrical surface, a bottom surface having an annular seal groove therein having an annular seal therein, an outer diameter cylindrical surface, and a plurality of apertures extending from the upper surface to the bottom surface;

an interface clamp including a generally cylindrical annular member having an upper surface, an inner cylindrical surface, a lower surface, an outer cylindrical surface, and a plurality of threaded apertures extending from the upper surface to the lower surface;
 an annular seal located between the upper lid and the lid clamp and the object clamp;
 an annular seal located between the lid clamp and the middle lid;
 a plurality of threaded fasteners, each threaded fastener of the plurality of threaded fasteners extending through the upper lid, extending through the lid clamp, and engaging a portion of a threaded aperture of the plurality of threaded apertures of the middle lid thereinto;
 and
 another plurality of threaded fasteners, each threaded fastener of the another plurality of threaded fasteners extending through the interface clamp and engaging a portion of a threaded blind aperture of the plurality of threaded blind apertures extending from the first cylindrical annular surface of the middle lid thereinto.

169. (Amended) An apparatus for planarization of a surface on a wafer using an object comprising:

an upper lid including a generally cylindrical annular member having an upper surface, an inner diameter surface, a lower surface, an outer diameter surface, and a plurality of apertures extending from the upper surface to the lower surface;
 a lid clamp including a generally cylindrical annular member having an upper surface, an inner cylindrical surface, a lower surface, an outer cylindrical surface, and a plurality of apertures extending therethrough;
 a middle lid including a generally cylindrical annular member having an upper surface, a frustoconical annular inner surface, an inner cylindrical surface, an annular cylindrical lip having a plurality of radially extending grooves therein, a first cylindrical annular surface having a plurality of threaded blind apertures therein, a first vertical outer diameter surface, a second cylindrical annular surface, a second vertical outer diameter surface, at least one aperture extending from the second vertical outer diameter surface to the inner

cylindrical surface for the flow of fluid therethrough, and a plurality of threaded apertures;

a lower lid including a generally cylindrical annular member having a portion thereof located below a lower surface of an object, the lower lid including an upper surface having an annular seal groove therein having an annular seal therein, a first vertical inner cylindrical surface, an inner annular surface having a plurality of blind apertures therein, a second vertical inner cylindrical surface, a bottom surface having an annular seal groove therein having an annular seal therein, an outer diameter cylindrical surface, and a plurality of apertures extending therethrough from the upper surface to the bottom surface;

an interface clamp including a generally cylindrical annular member having an upper surface, an inner cylindrical surface, a lower surface, an outer diameter surface, and a plurality of apertures extending therethrough;

an interface material located below a lower surface of the object;

an object clamp including a generally cylindrical annular member having an upper surface, a vertical inner diameter surface, a frustoconical annular surface, a lower surface, and a vertical outer diameter surface, and a plurality of apertures extending from the upper surface to the lower surface, the object clamp having at least a portion of the object located therein;

an annular seal located between the upper lid and the lid clamp and the object clamp;

an annular seal located between the lid clamp and the middle lid;

a plurality of threaded fasteners, each threaded fastener extending through the upper lid and engaging a portion of an aperture of the plurality of threaded apertures extending from the upper surface of the middle lid to the second cylindrical annular surface thereof; and

another plurality of threaded fasteners, each threaded fastener of the another plurality of threaded fasteners extending through an aperture of the plurality of apertures in the interface clamp and engaging a portion of a blind threaded aperture of the plurality of blind threaded apertures extending from the first cylindrical annular surface of the middle lid thereinto.

170. (Amended) An apparatus for planarization of a surface on a wafer using an object comprising:

- an upper lid including a generally cylindrical annular member having an upper surface, an inner diameter surface, a lower surface, an outer diameter surface, and a plurality of apertures extending from the upper surface to the lower surface;
- a lid clamp including a generally cylindrical annular member having an upper surface, an inner cylindrical surface, a lower surface, an outer cylindrical surface, and a plurality of apertures extending from the upper surface to the lower surface, the lid clamp located below the upper lid;
- a middle lid including a generally cylindrical annular member having a first upper surface, a vertical cylindrical surface, a second upper surface, a first inner diameter vertical surface having an annular groove therein having an annular seal therein, an annular cylindrical surface having an annular groove therein having an annular seal therein, a second inner diameter vertical surface, a lower surface, an outer diameter surface, at least one aperture extending from the outer diameter surface to the second inner diameter vertical surface for the supply of fluid therethrough, a plurality of threaded apertures extending from the lower surface, and a plurality of threaded apertures extending from the first upper surface;
- a lower lid including a generally cylindrical annular member having an upper surface having an annular seal groove therein having an annular seal therein, a first vertical inner cylindrical surface, an inner annular surface having a plurality of blind apertures therein, a second vertical inner cylindrical surface, a lower surface having an annular seal groove therein having an annular seal therein, an outer diameter cylindrical surface, a plurality of apertures extending from the upper surface to the lower surface;
- an interface clamp including a generally cylindrical annular member having an upper surface, an inner diameter surface, a lower surface, an inner annularly extending lip, and a plurality of apertures;
- an interface material located below a lower surface of the object;
- an annular seal located between the upper lid and the lid clamp and the middle lid;
- an annular seal located between the lid clamp and the middle lid;

a plurality of threaded fasteners, each threaded fastener of the plurality of threaded fasteners extending through the upper lid, extending through the lid clamp, and engaging a portion of a threaded aperture of the plurality of threaded apertures extending from the first upper surface of the middle lid thereinto; and

another plurality of threaded fasteners, each threaded fastener of the another plurality of threaded fasteners extending through the interface clamp and engaging a portion of a threaded aperture of the plurality of threaded apertures extending from the lower surface of the middle lid thereinto.

171. (Amended) An apparatus for planarization of a surface on a wafer using an object comprising:

an upper lid including a generally cylindrical annular member having an upper surface, an inner diameter surface, a lower surface, an outer diameter surface, and a plurality of apertures extending from the upper surface to the lower surface;

a lid clamp including a generally cylindrical annular member having an upper surface, an inner cylindrical surface, a lower surface, an outer cylindrical surface, and a plurality of apertures extending therethrough;

a middle lid including a generally cylindrical annular member having an upper surface, a frustoconical annular inner surface, an inner cylindrical surface, a first lower surface, a first vertical outer diameter surface, a second lower surface, a second vertical outer diameter surface, and a plurality of apertures extending from the upper surface to the second lower surface;

a lower lid including a generally cylindrical annular member having an upper surface having an annular seal groove therein having an annular seal therein, a first vertical inner cylindrical surface, an inner annular surface, a second vertical inner cylindrical surface, a bottom surface having an annular seal groove therein having an annular seal therein, an outer diameter cylindrical surface, and a plurality of apertures extending from the upper surface to the bottom surface;

an object clamp including a generally cylindrical annular member having an upper surface, an inner diameter vertical surface, a frustoconical annular surface, a lower surface, and an outer diameter vertical surface;

an interface material located below the object and below the first lower surface of the middle lid;

an annular seal located between the upper lid and the lid clamp and the object clamp;

an annular seal located between the lid clamp and the middle lid; and

a plurality of threaded fasteners, each threaded fastener extending through the upper lid and engaging a portion of an aperture of the plurality of apertures extending from the upper surface of the middle lid thereinto.

172. (Amended) An apparatus for planarization of a surface on a wafer using an object comprising:

a lid assembly comprising:

an upper lid including a generally cylindrical annular member having an upper surface, an inner diameter surface, a lower surface, an outer diameter surface, and a plurality of apertures extending from the upper surface to the lower surface;

a lid clamp including a generally cylindrical annular member having an upper surface, an inner diameter surface, a lower surface, an outer diameter surface, and a plurality of apertures extending from the upper surface to the lower surface, the lid clamp located below the upper lid;

a middle lid including a generally cylindrical annular member having an upper surface, a frustoconical annular inner surface, an inner cylindrical surface, a first cylindrical annular surface having a plurality of threaded blind apertures therein, a first vertical outer diameter surface, a second cylindrical annular surface, a second vertical outer diameter surface, at least one aperture for supplying a gas therethrough, a plurality of threaded apertures, and at least one annular seal for sealingly engaging a portion of an object, the middle lid located between the upper lid and a lower lid;

an object clamp including a generally cylindrical annular member having an upper surface, an inner diameter vertical surface, a frustoconical annular surface, a lower surface and an outer diameter surface;

an annular seal having a portion thereof abutting the object clamp and the middle lid;

an interface material located below the object;

the lower lid having a portion thereof located below the lower surface of the object, the lower lid including a generally cylindrical annular member having an upper surface having an annular seal groove therein having an annular seal therein sealingly engaging the second cylindrical annular surface of the middle lid, a first vertical inner cylindrical surface, an inner annular surface having a plurality of blind apertures therein, a second vertical inner cylindrical surface, a bottom surface having an annular seal groove therein having an annular seal therein, an outer diameter cylindrical surface, and a plurality of apertures extending from the upper surface to the bottom surface;

an interface clamp including a generally cylindrical annular member having an upper surface, an inner cylindrical surface, a lower surface, an outer cylindrical surface, and a plurality of threaded apertures extending from the upper surface to the lower surface;

an annular seal located between the upper lid and the lid clamp and the object clamp;

an annular seal located between the lid clamp and the middle lid;

a plurality of threaded fasteners, each threaded fastener of the plurality of threaded fasteners extending through the upper lid, extending through the lid clamp, and engaging a portion of a threaded aperture of the plurality of threaded apertures of the middle lid thereinto;

another plurality of threaded fasteners, each threaded fastener of the another plurality of threaded fasteners extending through the interface clamp and engaging a portion of a threaded blind aperture of the plurality of threaded blind apertures extending from the first cylindrical annular surface of the middle lid thereinto; and

a chamber located below the lid assembly, the chamber including:
a platform located in the chamber.

173. The apparatus of claim 172, further comprising:
a resilient member located on the platform.

174. The apparatus of claim 172, further comprising:
a thermocouple for measuring a temperature in the chamber.

175. (Amended) An apparatus for planarization of a surface on a wafer using an object comprising:

a lid assembly comprising:

an upper lid including a generally cylindrical annular member having an upper surface, an inner diameter surface, a lower surface, an outer diameter surface, and a plurality of apertures extending from the upper surface to the lower surface;

a lid clamp including a generally cylindrical annular member having an upper surface, an inner cylindrical surface, a lower surface, an outer cylindrical surface, and a plurality of apertures extending therethrough;

a middle lid including a generally cylindrical annular member having an upper surface, a frustoconical annular inner surface, an inner cylindrical surface, an annular cylindrical lip having a plurality of radially extending grooves therein, a first cylindrical annular surface having a plurality of threaded blind apertures therein, a first vertical outer diameter surface, a second cylindrical annular surface, a second vertical outer diameter surface, at least one aperture extending from the second vertical outer diameter surface to the inner cylindrical surface for the flow of fluid therethrough, and a plurality of threaded apertures;

a lower lid including a generally cylindrical annular member having an upper surface having an annular seal groove therein having an annular seal therein, a first vertical inner cylindrical surface, an inner annular surface having a plurality of

blind apertures therein, a second vertical inner cylindrical surface, a bottom surface having an annular seal groove therein having an annular seal therein, an outer diameter cylindrical surface, and a plurality of apertures extending therethrough from the upper surface to the bottom surface;

an interface clamp including a generally cylindrical annular member having an upper surface, an inner cylindrical surface, a lower surface, an outer diameter surface, and a plurality of apertures extending therethrough;

an interface material located and retained below the object;

an object clamp including a generally cylindrical annular member having an upper surface, a vertical inner diameter surface, a frustoconical annular surface, a lower surface and a vertical outer diameter surface, and a plurality of apertures extending from the upper surface to the lower surface;

an annular seal located between the upper lid and the lid clamp and the object clamp;

an annular seal located between the lid clamp and the middle lid;

a plurality of threaded fasteners, each threaded fastener of the plurality of threaded fasteners extending through the upper lid and engaging a portion of a threaded aperture of the plurality of threaded apertures extending from the upper surface of the middle lid to the second cylindrical annular surface thereof; and

another plurality of threaded fasteners, each threaded fastener of the another plurality of threaded fasteners extending through an aperture of the plurality of apertures in the interface clamp and engaging a portion of a blind threaded aperture of the plurality of blind threaded apertures extending from the first cylindrical annular surface of the middle lid thereinto; and

a chamber located below the lid assembly, the chamber including:

a platform located in the chamber.

176. The apparatus of claim 175, further comprising:

a resilient member located on the platform.

177. The apparatus of claim 175, further comprising:
a thermocouple for measuring a temperature in the chamber.

178. (Amended) An apparatus for planarization of a surface on a wafer using an object comprising:
a lid assembly comprising:

- an upper lid including a generally cylindrical annular member having an upper surface, an inner diameter surface, a lower surface, an outer diameter surface, and a plurality of apertures extending from the upper surface to the lower surface;

- a lid clamp including a generally cylindrical annular member having an upper surface, an inner cylindrical surface, a lower surface, an outer cylindrical surface, and a plurality of apertures extending from the upper surface to the lower surface, the lid clamp located below the upper lid;

- a middle lid including a generally cylindrical annular member having a first upper surface, a vertical cylindrical surface, a second upper surface, a first inner diameter vertical surface having an annular groove therein having an annular seal therein, an annular cylindrical surface having an annular groove therein having an annular seal therein, a second inner diameter vertical surface, a lower surface, an outer diameter surface, at least one aperture extending from the outer diameter surface to the second inner diameter vertical surface for the supply of fluid therethrough, and a plurality of threaded apertures extending from the lower surface, and a plurality of threaded apertures extending from the first upper surface;

- a lower lid including a generally cylindrical annular member having an upper surface having an annular seal groove therein having an annular seal therein, a first vertical inner cylindrical surface, an inner annular surface having a plurality of blind apertures therein, a second vertical inner cylindrical surface, a lower surface having an annular seal groove therein having an annular seal therein, an outer

diameter cylindrical surface, a plurality of apertures extending from the upper surface to the lower surface;

an interface clamp including a generally cylindrical annular member having an upper surface, an inner diameter surface, a lower surface, an inner annularly extending lip, and a plurality of apertures;

an interface material located below the object;

an annular seal located between the upper lid and the lid clamp and the middle lid;

an annular seal located between the lid clamp and the middle lid;

a plurality of threaded fasteners, each threaded fastener of the plurality of threaded fasteners extending through the upper lid, extending through the lid clamp, and engaging a portion of a threaded aperture of the plurality of threaded apertures extending from the first upper surface of the middle lid thereinto; and

another plurality of threaded fasteners, each threaded fastener of the another plurality of threaded fasteners extending through the interface clamp and engaging a portion of a threaded aperture of the plurality of threaded apertures extending from the lower surface of the middle lid thereinto; and

a chamber located below the lid assembly, the chamber including:

a platform located in the chamber.

179. The apparatus of claim 178, further comprising:

a resilient member located on the platform.

180. The apparatus of claim 178, further comprising:

a thermocouple for measuring a temperature in the chamber.

181. (Amended) An apparatus for planarization of a surface on a wafer using an object comprising:

a lid assembly comprising:

an upper lid including a generally cylindrical annular member having an upper surface, an inner diameter surface, a lower surface, an outer diameter surface, and a plurality of apertures extending from the upper surface to the lower surface;

a lid clamp including a generally cylindrical annular member having an upper surface, an inner cylindrical surface, a lower surface, an outer cylindrical surface, and a plurality of apertures extending therethrough;

a middle lid including a generally cylindrical annular member having an upper surface, a frustoconical annular inner surface, an inner cylindrical surface, a first lower surface, a first vertical outer diameter surface, a second lower surface, a second vertical outer diameter surface, and a plurality of apertures extending from the upper surface to the second lower surface;

a lower lid including a generally cylindrical annular member having an upper surface having an annular seal groove therein having an annular seal therein, a first vertical inner cylindrical surface, an inner annular surface, a second vertical inner cylindrical surface, a bottom surface having an annular seal groove therein having an annular seal therein, an outer diameter cylindrical surface, and a plurality of apertures extending from the upper surface to the bottom surface;

an object clamp including a generally cylindrical annular member having an upper surface, an inner diameter vertical surface, a frustoconical annular surface, a lower surface, and an outer diameter vertical surface;

an interface material located below the object and below the first lower surface of the middle lid;

an annular seal located between the upper lid and the lid clamp and the object clamp;

an annular seal located between the lid clamp and the middle lid; and

a plurality of threaded fasteners, each threaded fastener extending through the upper lid and engaging a portion of an aperture of the plurality of apertures extending from the upper surface of the middle lid thereinto; and
a chamber located below the lid assembly, the chamber including:
a platform located in the chamber.

182. The apparatus of claim 181, further comprising:
a resilient member located on the platform.

183. The apparatus of claim 181, further comprising:
a thermocouple for measuring a temperature in the chamber.